AMENDMENTS TO THE CLAIMS

Claims 1-46 (Canceled)

47. (Withdrawn) A method for producing antibodies to a three-dimensional epitope of a bioactive human parathyroid hormone, comprising:

a) immunizing an animal with the bioactive human parathyroid hormone; and

b) recovering antibodies from the animal; whereby the antibodies specifically recognize the three-dimensional structure of the bioactive human parathyroid hormone.

48. (Withdrawn) The method of claim 47, further comprising immunizing the animal with the human parathyroid hormone a second time before recovering the antibodies from the animal.

49. (Withdrawn) The method of claim 47, wherein the human parathyroid hormone is coupled to a carrier.

50. (Withdrawn) The method of claim 49, wherein the carrier is keyhole limpet hemocyanin.

51. (Withdrawn) The method of claim 47, wherein the bioactive human parathyroid hormone comprises SEQ ID NO: 1.

52. (Withdrawn) The method of claim 47, further comprising isolating the antibodies.

53. (Withdrawn) The method of claim 52, wherein the antibodies are isolated by affinity chromatography.

54. (Withdrawn) The method of claim 53, wherein the antibodies are isolated by screening the antibodies with fragments of the human parathyroid hormone linked to a solid phase.

55. (Withdrawn) A method for producing antibodies that recognize and bind the bioactive, three-dimensional epitope of parathyroid hormone, comprising

a) immunizing an animal with parathyroid hormone;

b) immunizing the animal with parathyroid hormone a second time; and

c) recovering the antibodies from the animal,

whereby the antibodies recognize and bind the bioactive, three-dimensional epitope of parathyroid hormone.

56. (Withdrawn) The method of claim 55, wherein the parathyroid hormone is conjugated to a carrier.

57. (Withdrawn) The method of claim 56, wherein the carrier is keyhole limpet hemocyanin.

58. (Withdrawn) The method of claim 54, wherein the parathyroid hormone is human parathyroid hormone.

59. (Withdrawn) The method of claim 55, further comprising isolating the antibodies so recovered.

60. (Withdrawn) The method of claim 59, wherein the antibodies are isolated by affinity chromatography.

61. (Withdrawn) The method of claim 60, wherein the antibodies are isolated by fragments of parathyroid hormone coupled to a solid phase.

62. (Withdrawn) The method of claim 61, wherein the fragments of parathyroid hormone are selected from the group consisting of amino acids 1-13, 13-34, and 39-84 of SEQ ID NO: 1.

63. (Withdrawn) The method of claim 61, wherein the antibodies are isolated by a fragment of parathyroid hormone consisting of amino acids 1-13 of SEQ ID NO: 1.

64. (Withdrawn) A method for producing antibodies that recognize and bind the bioactive, three-dimensional epitope of parathyroid hormone, comprising

a) immunizing an animal with parathyroid hormone, wherein the parathyroid hormone comprises amino acids 1-84 of SEQ ID NO: 1;

b) immunizing the animal with parathyroid hormone a second time; and

c) recovering the antibodies from the animal,

whereby the antibodies recognize and bind the bioactive, three-dimensional epitope of parathyroid hormone.

65. (Withdrawn) The method of claim 64, further comprising isolating the antibodies so recovered.

66. (Withdrawn) The method of claim 64, wherein the bioactive three-dimensional epitope of parathyroid hormone consists of amino acids 1-13 of SEQ ID NO: 1.

67. (Withdrawn) A method for producing antibodies that recognize and bind the bioactive, three-dimensional amino terminus of parathyroid hormone, comprising

a) immunizing an animal with parathyroid hormone conjugated to a keyhole limpet hemocyanin, wherein the parathyroid hormone comprises amino acids 1-84 of SEQ ID NO: 1;

b) subsequently immunizing the animal with parathyroid hormone; and

c) recovering the antibodies from the animal,

whereby the antibodies recognize and bind the bioactive, three-dimensional amino terminus of parathyroid hormone.

68. (Withdrawn) The method of claim 67, wherein the bioactive three-dimensional amino terminus of parathyroid hormone consists of amino acids 1-13 of SEQ ID NO: 1.

69. (Currently Amended) An isolated antibody that ~~recognizes and~~ specifically binds ~~the~~ to a bioactive, three-dimensional epitope of a parathyroid hormone (PTH), wherein said isolated antibody binds to said three-dimensional epitope within a whole PTH with a higher affinity than its binding to said three-dimensional epitope within a PTH fragment, and said isolated antibody does not specifically bind to a non-(1-84) or non-(1-86) PTH fragment.

70. (Previously Presented) The isolated antibody of claim 69, wherein the bioactive, three dimensional epitope is the amino terminus of parathyroid hormone.

71. (Previously Presented) The isolated antibody of claim 69, wherein the parathyroid hormone is human parathyroid hormone.

72-77. (Cancelled)

78. (Currently Amended) A therapeutic composition comprising ~~the antibody of claim 75~~ an isolated antibody that specifically binds to a bioactive, three-dimensional epitope of a parathyroid hormone (PTH), wherein said isolated antibody binds to said three-dimensional epitope within a whole PTH with a higher affinity than its binding to said three-dimensional epitope within a PTH fragment, and said isolated antibody does not specifically bind to a non-(1-84) or non-(1-86) PTH fragment, and a pharmaceutically-acceptable carrier.

79. (Currently Amended) The antibody of claim ~~75~~ 69, wherein the antibody reduces adenylate cyclase activity by binding to the ~~bioactive portion~~ three-dimensional epitope of the parathyroid hormone.

80. (Currently Amended) ~~Any one of the antibodies of claims~~ The antibody of claim 69, wherein the antibody is a polyclonal antibody.

81. (Currently Amended) ~~Any one of the antibodies of claims~~ The antibody of claim 69, wherein the antibody is a monoclonal antibody.

82. (Currently Amended) ~~Any one of the antibodies of claims~~ The antibody of claim 69, wherein the antibody is a humanized antibody.

83. (Currently Amended) ~~Any one of the antibodies of claims~~ The antibody of claim 69, wherein the antibody is an antibody fragment.

84. (Currently Amended) ~~Any one of the antibodies of claims~~ The antibody of claim 69, which is coupled to a detectable marker.

85. (Cancelled)

86. (Currently Amended) ~~A~~ An isolated polyclonal antibody that ~~recognizes and~~ specifically binds ~~the~~ to a bioactive three-dimensional epitope of human parathyroid hormone (PTH) produced by a process comprising the following steps:

a) immunizing an animal with human ~~parathyroid hormone~~ whole PTH ~~linked with keyhole limpet hemocyanin~~ as a primary immunization;

b) immunizing ~~the~~ said animal with human ~~parathyroid hormone~~ whole PTH subsequent to said primary immunization; ~~and~~

c) recovering ~~the antibodies~~ a polyclonal antibody from ~~the~~ said animal, and

d) isolating said polyclonal antibody by binding said polyclonal antibody to at least four amino acids in the common sequence of human and rat PTH (1-8) sequence,

whereby ~~the antibodies~~ said polyclonal antibody ~~recognize and bind~~ specifically binds to ~~the~~ said bioactive three-dimensional epitope of human ~~parathyroid hormone~~ PTH with a higher affinity than its binding to said three-dimensional epitope within a PTH fragment.

87-91. (Cancelled)

92. (Currently Amended) A kit comprising an antibody that ~~recognizes and~~ specifically binds ~~the~~ to a bioactive, three-dimensional epitope of parathyroid hormone (PTH), wherein said isolated antibody binds to said three-dimensional epitope within a whole PTH with a higher affinity

than its binding to said three-dimensional epitope within a PTH fragment and said isolated antibody does not specifically bind to a non-(1-84) or non-(1-86) PTH fragment.

93. (Previously Presented) The kit of claim 92, wherein the antibody is coupled with a detectable label.

94. (Cancelled)

95. (Currently Amended) The kit of claim 92, further comprising ~~tools~~ a tool for obtaining a biological sample containing parathyroid hormone from a patient.

96. (Currently Amended) The kit of claim 93, wherein the detectable label is selected from the group consisting of a chemiluminescent markers, a fluorescent markers, a radioactive markers, and an enzymatic markers.

97. (Previously Presented) The kit of claim 93, wherein the detectable label is an acridinium ester.

98. (Withdrawn) A method for detecting bioactive parathyroid hormone in a sample, comprising

a) exposing the sample to an antibody that recognizes and binds the bioactive three-dimensional epitope of parathyroid hormone; and

b) detecting the antibody-hormone complex, thereby detecting the bioactive parathyroid hormone in the sample.

99. (Withdrawn) The method of claim 98, wherein the antibody that recognizes and binds the bioactive three-dimensional epitope of parathyroid hormone is coupled with a detectable marker.

100. (Withdrawn) The method of claim 98, further comprising exposing the antibody-hormone complex to another antibody that recognizes and binds parathyroid hormone before step (b).

101. (Withdrawn) A method for detecting bioactive parathyroid hormone in a sample, comprising

a) exposing the sample to a capture antibody that recognizes and binds the bioactive three-dimensional epitope of parathyroid hormone;

b) exposing the capture antibody-hormone complex to a detection antibody that binds a different epitope than the capture antibody; and

b) detecting the antibody-hormone complex,

thereby detecting the bioactive parathyroid hormone in the sample.

102. (Withdrawn) The method of claim 101, wherein the detection antibody is coupled to a chemiluminescent marker.

103. (Withdrawn) The method of claim 102, wherein the chemiluminescent marker is an acridinium ester.

104. (Withdrawn) The method of claim 98, wherein the sample is from a patient with hyperparathyroidism or hypoparathyroidism.

105. (Withdrawn) The method of claim 101, wherein the sample is from a patient with hyperparathyroidism or hypoparathyroidism.

106. (Withdrawn) An immunoassay comprising an antibody that recognizes and binds the bioactive three-dimensional amino terminus of human parathyroid hormone.

107. (Withdrawn) The immunoassay of claim 106, wherein the bioactive three-dimensional amino terminus consists of amino acids 1-13 of SEQ ID NO: 1.